

Evaluation of Internet-Based Distance Education for Dentists

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INTRODUCTION

Continuing education and direct mail have been employed successfully to provide information to dentists and increase their knowledge [1]. Whether dentists' use of computerized literature searching, electronic conferencing (E-conferencing), and electronic mail will have similar effects, is unknown. Research objectives were to assess information sources and use of technology by dentists, determine if E-conferencing could be used for distance education with dentists, and identify any barriers to use of E-conferencing.

METHODS

Participants (Pilot Group) were solicited through journal advertisements, letters to dental societies, and informal contacts. This group received E-mail, E-conferencing, MEDLINE, gopher, and Web access. A Control Group was randomly selected and matched to Pilots by age, year of dental graduation, and practice location. Continuing education was provided using an asynchronous conference (Confer U) that lasted about 9 months and contained 42 items focusing on contemporary periodontics. There were 3151 conference uses totaling to 545 hours of access.

The Pilot Group (conference users and nonusers) and the Control Group were compared via pre- and posttest mailed surveys (response rates of 89% and 93% respectively). Scales were developed to measure participants' use of information sources, experience with computing applications, and knowledge, opinions, and behaviors regarding periodontics. Subjects available for analysis were 40 Pilot Users (PUs), 17 Pilot Nonusers (PNUs), and 117 Control Group subjects (CGs). Data analyses were performed with the chi-square test and repeated measures ANOVA for group by time changes during the intervention.

RESULTS

Mean ages were 43.4 yrs for PUs, 41.6 yrs for PNUs, and 43.3 yrs for CGs; not statistically significant. Mean years since graduation were 15.8 yrs. for PUs, 15.6 yrs. for PNUs, and 19.2 yrs. for CGs; not significant. PUs and PNUs were more likely than CGs to own a computer at work ($p<0.01$) and at home ($p<0.01$).

No differences in use of traditional information sources were noted between any group before or after the intervention. However, more use of E-conferencing, MEDLINE, and E-mail was observed among PUs than the other two groups following the intervention.

Experience with CD-ROMs and modems increased among all groups during the time of the intervention (time effect, $p<0.01$); modem use also increased specifically among the PUs (group effect, $p<0.05$). All groups (time effect, $p<0.01$) increased their experience with E-conferencing, MEDLINE, and E-mail. PUs reported the largest experience scores (group effect, $p<0.01$). All groups increased their experience with management information systems ($p<0.05$), intra- and extraoral cameras (both $p<0.01$), and expert systems ($p<0.05$) during the intervention time.

No group or time effects were observed for knowledge, opinions, or behaviors related to the continuing education. Regarding participation, PNUs were more likely than PUs to report not having a suitable modem ($p<0.05$), project software not working on their computers ($p<0.01$), and the project format not being convenient for them ($p<0.05$).

DISCUSSION

Measurable effects of the program included more use of E-conferencing, MEDLINE, and E-mail by PUs compared to the other groups. The educational intervention had no effect. Some reasons for this may be insufficient sample sizes, easy pretest questions, a too lengthy intervention, subject attrition, and posttesting after intervention effects had diminished. Future projects need to address all these issues, particularly subject recruitment and retention. Developing a user group was labor intensive, and subject attrition approached 50% during the intervention. A Web-based pilot conference was preferred by participants over Confer U.

CONCLUSIONS

Participants' use of electronic resources increased during the project, but future studies need to consider increasing sample sizes, constructing more sensitive tests, and decreasing intervention lengths to achieve observable education effects. Web-based programs are likely preferable by participants.

REFERENCES

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